

INTEGRATION OF UAVS **INTO UK AIRSPACE**



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CIVIL AVIATION AUTHORITY

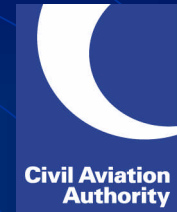
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AIM

To inform the conference of the ongoing work by DAP to integrate UAVs into all classes of UK Airspace



UAV OPERATIONS



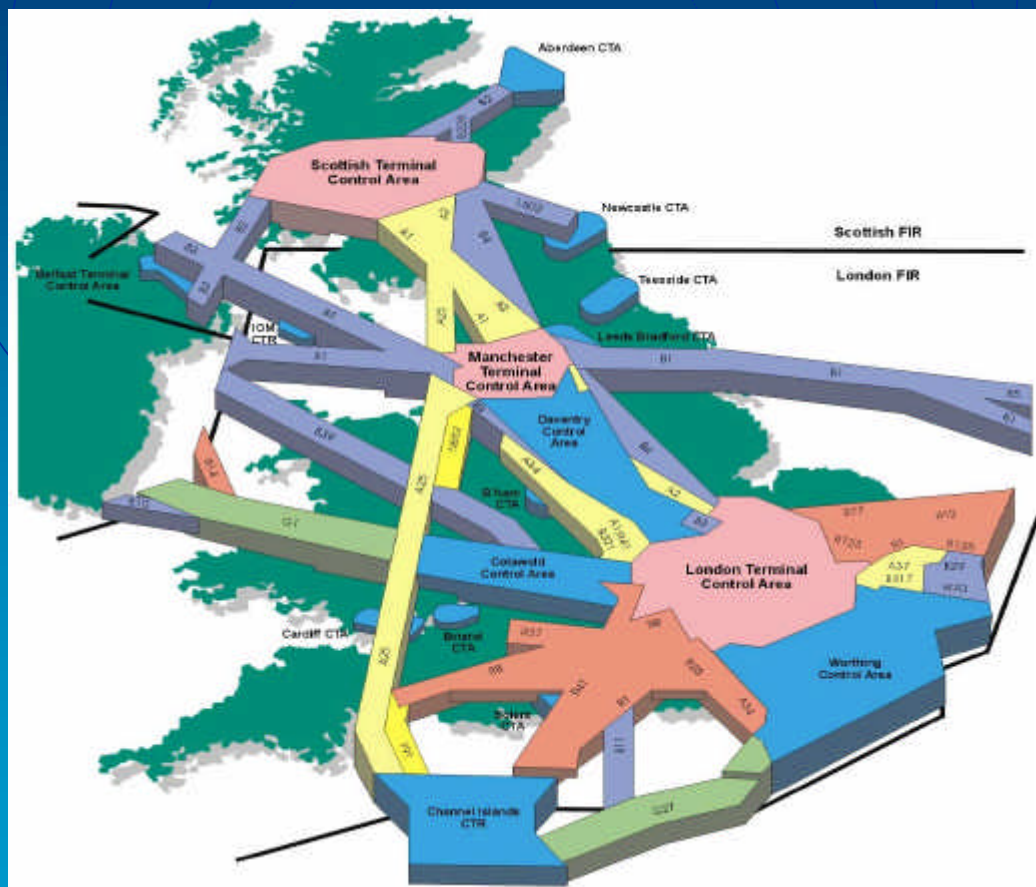
- UK Airspace
- Integrating UAVs with other airspace users.
 - UAV Operations in UK Airspace Guidance Doc
 - Sense and Avoid Criteria

UK Airspace



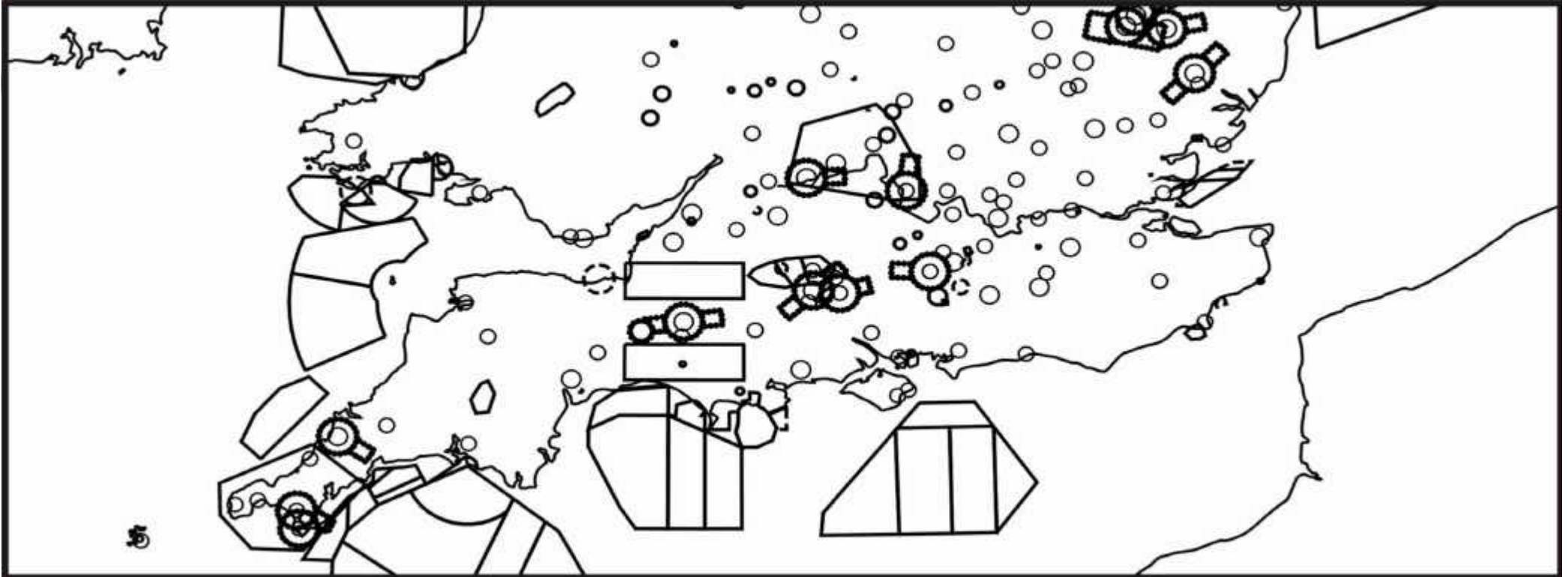
UK Sovereign
airspace

UK Airspace

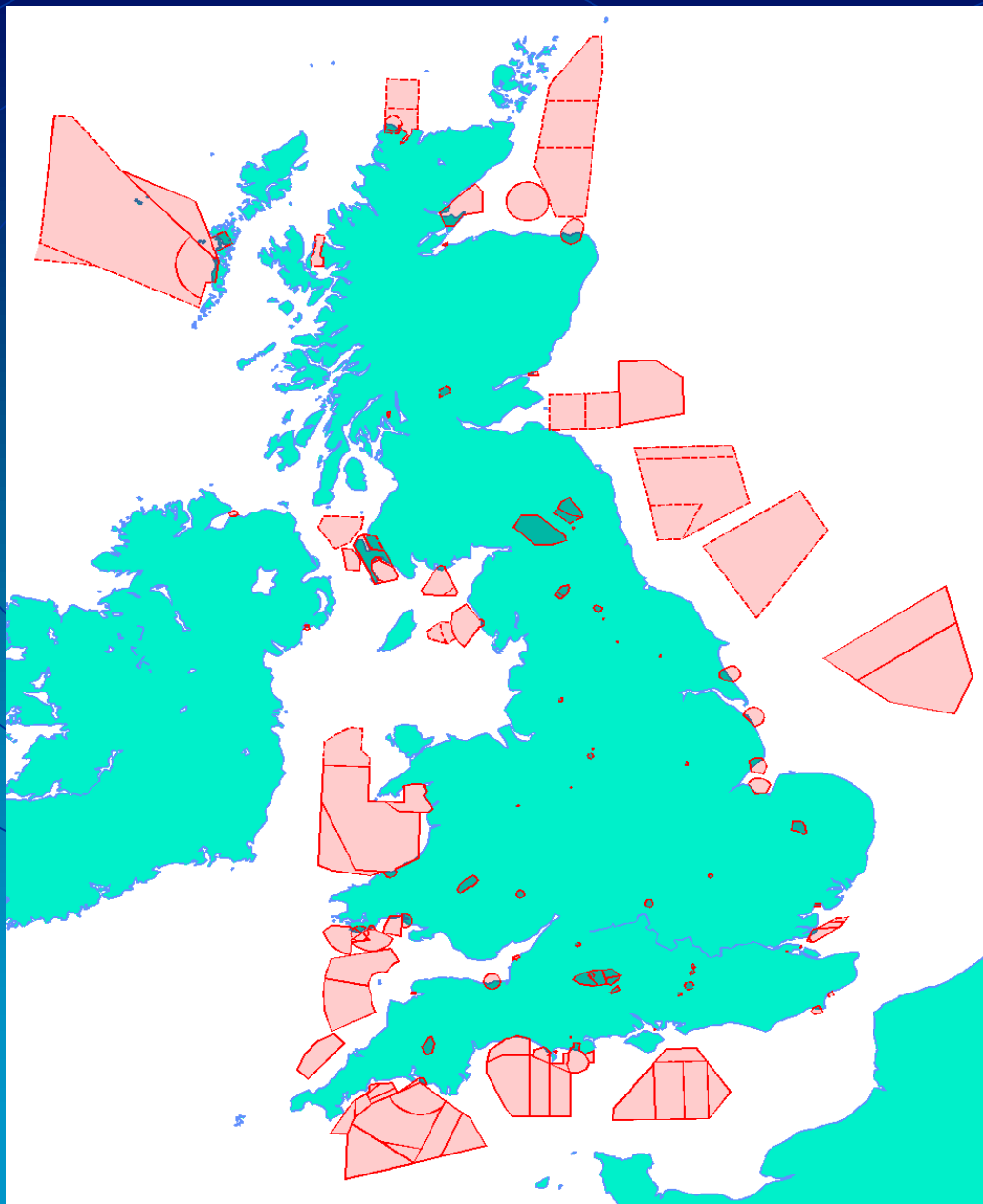


- UK Controlled Airspace (CAS)

UK Airspace



Examples of airspace divisions
outside CAS



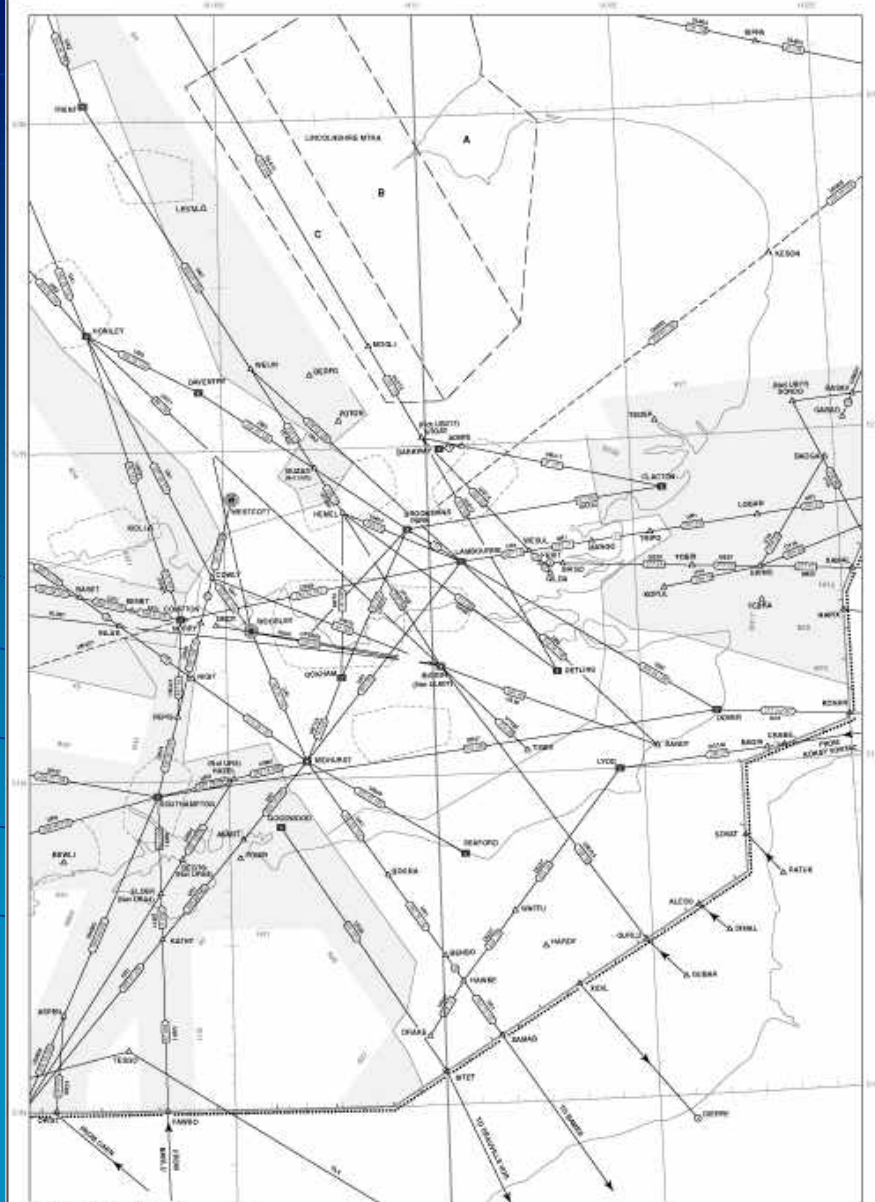
UK Danger Areas



UK AIP

UPPER AIRSPACE CONTROL AREA AND UPPER ATS ROUTES South East

(2 Dec 99) ENR 6-3-2-3



CHANGE GENERAL REVISION

AERO INFO DATE 30 SEP 99

Civil Aviation Authority

EFFECTIVE DATE 2 DEC 99

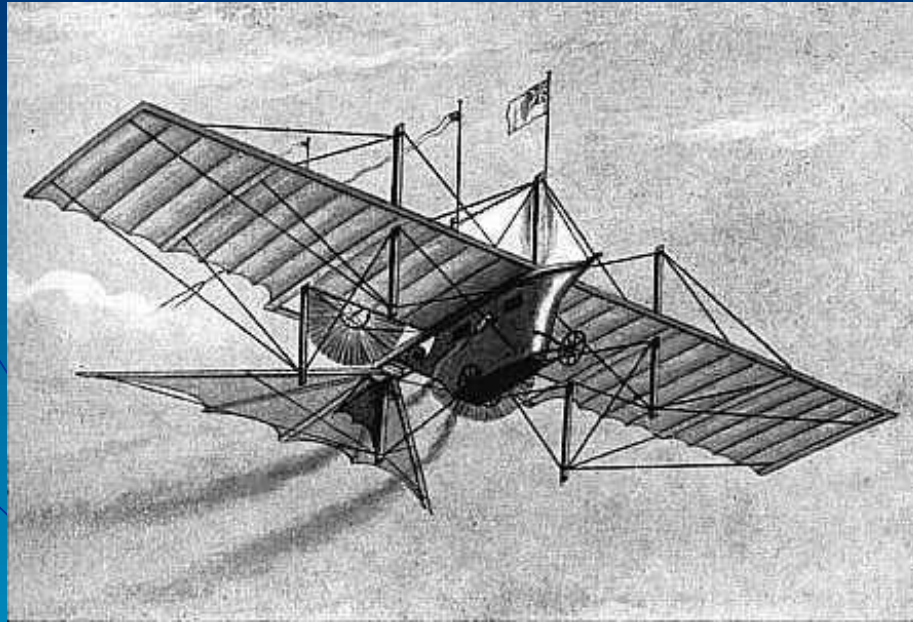
AMDT AIRAC 12/99



DAP Living Definition

“An aircraft which is designed, or modified, not to carry a human pilot and is operated under remote or autonomous control.”

FIRST UK UAV FLIGHT



1848 Chard Somerset
John Stringfellow

*Without CAA
Approval*

Key Players

Operations Steering Group – Meets **6**
Monthly

Operations Working Group – Meets **3**
Monthly

Includes experts from MOD (including Defence Procurement Agency), Unmanned Aerial Vehicle System Association (representing industry), other military and civil members and airspace regulators

UAV Operations in UK Airspace - Guidance



- "UAV Operations in UK Airspace - Guidance" - "Signpost Document" for Industry and Operators.
- It will point the reader to the appropriate documentation, regulatory authority or policy makers according to their needs.
- www.caa.co.uk/dap

UAV Operations in UK Airspace - Guidance



- **Operator Qualifications**
 - **UAV Commander**
 - Overall responsibility
 - May command more than one UAV
 - **UAV Pilot (UAVp)**
 - Actively exercises remote control for non-autonomous flights, or monitors autonomous flights

UAV Operations in UK Airspace - Guidance



Airspace Principles

- ...operate within existing arrangements.
- ...no automatic right of airspace use..
- ...equivalent level of compliance...
- ...no increased risk to existing users..
- ...initially flights outside Danger Areas will be in temporary segregated airspace.
- ...provision of ATS must be transparent to the controller...callsign to include "Unmanned"

UAV Operations in UK Airspace - Guidance



General Principles - Outside Danger Areas

- ...ATC comms continuously monitored...
- ...Vehicle Operator must be able to take immediate control...
- ...special equipment mandated for airspace must be carried...

UAV Operations in UK Airspace - Guidance



General Principles - Outside Danger Areas

- ...an approved method of aerial collision avoidance is required...
- ...an approved method of terrain clearance is required...
- ...Standard Operating Procedures required..
- ...comply with the IFR or VFR as they affect manned aircraft - they may not fly VFR in IMC even with non-visual collision avoidance...

UAV Operations in UK Airspace - Guidance



NASA Dryden Flight Research Center Photo Collection
<http://www.dfrc.nasa.gov/gallery/photo/index.html>
NASA Photo: EC99-45186-3 Date: September 1999 Photo by: Tom Tschida
Helios Prototype in flight over lakebed during second battery-powered flight

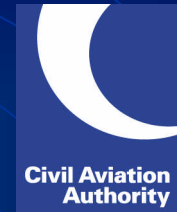
The CAA will consider any applications for “one-off” demonstration or proving flights outside the Danger Area structure.

UAV Operations in UK Airspace - Guidance



- **Next Steps:**
 - **Develop guidance in areas where it is lacking**
 - **Continue to address the “Sense and Avoid” issue**
 - **Await applications for UAV flights**

Top Tip



Manufacturers should not base their collision avoidance system on equipment currently fitted to other aircraft - they cannot wholly rely on an SSR-based system

Summary



The CAA anticipates the need for UAV integration in all classes of UK airspace - guidance and regulation for both civil and military will go hand in hand, wherever possible.

